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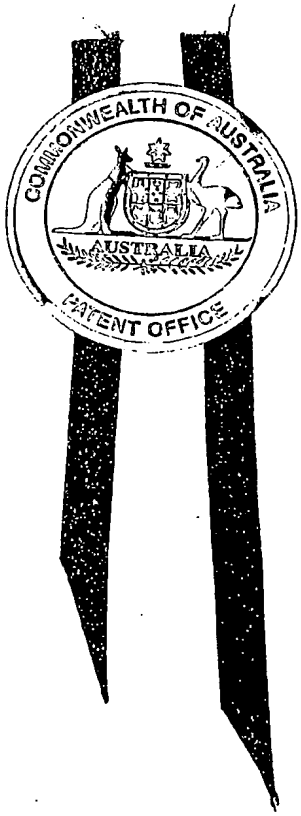

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LEANNE MYNOTT
MANAGER EXAMINATION SUPPORT
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AUSTRALIA

Patents Act 1990

PROVISIONAL SPECIFICATION

Invention Title:

IMPROVEMENTS IN AND RELATING TO SHOES

The invention is described in the following statement:

IMPROVEMENTS IN & RELATING TO SHOES

FIELD OF INVENTION

The present invention applies preferentially to sports shoes and describes methods for increasing the grip of the outer surface of the shoe upper when dry but also improving all round performance.

BACKGROUND DESCRIPTION

The present inventor has previously investigated grip in the upper of sports shoes, and specifically dry grip characteristics. In an earlier application the inventor investigated coating processes for materials, such as leather, which significantly increased dry grip characteristics. However, as an extension of this, the inventor has recognised that shoes may become damp or wet during use. The performance of standard sports shoes in the wet is relatively poor. The dry grip techniques of the applicant's earlier application represent an improvement over standard plain and textured leather, but excel primarily in the dry. Accordingly the inventor in this specification addresses the issue of a shoe with good dry and wet properties – an all round sports shoe so to speak.

The performance of wet and damp shoes is a very real problem, though methods used in the past have focused on texturing processes to roughen the surface of materials used, or to introduce raised features which increase water drainage as well as acting as physical raised surfaces which theoretically grip better. Examples include the rubber projections of Brutting (US 3,191,321) and the formations of Johnson (US 5,437,112). Exotic materials such as sharkskin have also been reported (WO0307745). However, these modifications only provide marginal and barely acceptable wet grip improvements, and with a cost to manufacturing ease, cost, and flexibility. The direction that the prior art is heading has thus failed to produce anything of outstanding or significantly improved quality that satisfies player's and manufacturer's needs alike for an all round sports shoe which may be used in the wet, as well as dry. The performance of a shoe is very important for both those learning a game, who train not only in the dry but also in the wet, as well as for the professional player – though their skill may compensate for short comings in a shoe's design. The exact qualities for a shoe are difficult to quantify, and are rather subjective, including factors such as: robustness, compliance in terms of feel and touch, and good shoe form and shape. At the

end of the day the player is looking for consistency of performance under different conditions, as well as accuracy, and hence a shoe with relatively consistent properties when wet or dry is of value.

Unfortunately a boot of standard athletic leather will typically perform poorly when wet, and quite a bit better when dry. Surface water layers tend to cause balls to hydroplane, or behave unpredictably – often sliding or spinning across the surface of the boot. The result is a loss in precision and accuracy.

It is therefore one object of the present invention to address these considerations.

It is a further object of the present invention to provide a shoe having, or means for modifying a shoe to have, improved gripping characteristics on at least part of the upper when dry when compared to standard athletic leathers.

Preferably it is also an object to provide a sports shoe having relatively consistent performance when wet or dry.

At the very least it is an object of the present invention to provide the public with a useful alternative choice.

Aspects of the present invention will be described by way of example only and with reference to the ensuing description.

GENERAL DESCRIPTION OF THE INVENTION

According to one aspect of the present invention there is provided a sports shoe of which at least a portion of the outer surface of the upper comprises gripping areas exhibiting improved gripping characteristics, compared to standard athletic leather, when dry.

According to one aspect of the present invention there is provided a sports shoe of which at least a portion of the outer surface of the upper comprises gripping areas exhibiting improved gripping characteristics, compared to standard athletic leather, when wet and which are of comparable performance when wet and dry.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the coefficient of friction for the gripping areas is 2.0 or greater, when dry.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the coefficient of friction for the gripping areas is 1.5 or greater, when wet.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the coefficient of friction for the gripping areas when wet are substantially the same as, or greater than, their coefficient of friction when dry.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the gripping areas comprise a material comprising a coating of a rubberised material with mineral particulate material dispersed within the coating.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the gripping areas comprise a material comprising a coating of a resinous material with mineral particulate material dispersed within the coating.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the gripping areas comprise a material with a micropile, or microhook surface.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the material so treated, is a leather or imitation leather material.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, in which the upper is fabricated, at least in part, by a material treated by such a polymer.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein treatment with a said polymer is performed during and/or after construction of the upper.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the upper comprises areas both treated and non-treated by such a polymer.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, in which at least a portion of the upper is constructed of a material to which selected portions have been treated with the aforesaid polymer material.

According to another aspect of the present invention there is provided a sports shoe, substantially as described in the preceding paragraph, wherein either the portions that have, or have not, been applied comprise at least one of: text, characters, logos, patterns, or marketing information.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, wherein the gripping areas comprise a material such as Greptile® G200 or the equivalent.

According to another aspect of the present invention there is provided a sports shoe, substantially as described above, in which the upper comprises gripping regions of different materials or coatings.

According to a further aspect of the present invention there is provided a dry-grip patch able to be applied to a surface that comprises:

- an intermediate substrate;
- an outer surface exhibiting improved frictional and gripping characteristics when dry as compared to standard athletic leather;
- an underside either having an applied adhesive coating, or is able to accept an adhesive agent.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the intermediate substrate comprises one or more layers of at least one of: a fabric, a woven material, a leather, and an artificial leather.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the substrate is flexible.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, which is able to stretch in a least one dimension.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the intermediate substrate is resiliently stretchable in at least one direction.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the outer surface has a coefficient of friction of or exceeding 1.5 when wet.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the outer surface has a coefficient of friction of or exceeding 2.0 when dry.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the coefficient of friction of the outer surface, when dry, is substantially the same as the coefficient of friction when wet.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the outer surface is treated with a flexible coating including particulate mineral matter.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the outer surface is the surface of a microhook or micropile fabric.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the outer surface is the surface of Greptile® G200 material.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which an adhesive material is applied to the underside, and is overlaid with a protective backing prior to use.

According to another aspect of the present invention there is provided a dry-grip patch, substantially as described above, in which the adhesive material is a non-permanent adhesive.

According to another aspect of the present invention there is provided a shoe to which at least one dry-grip patch, substantially as described above, is attached.

The present invention relates to a shoe, and preferentially a sports shoe such as used in ball sports. It has been discussed that a common problem with typical sports shoes, such as soccer boots, is that they become slippery when wet. This significantly reduces the accuracy of a player kicking the ball, as the ball can slide, or glance, or spin across the surface of the boot depending on the exact dynamics of the impact. Similarly, poor dry grip also introduces problems, and thus an improvement over standard athletic leather is sought. Consistency in wet and dry performance is also desirable.

The present invention introduces means for improving the wet and dry grip characteristics across the entire upper, or part of the upper, of a shoe. In this context this comprises at the very least improving the wet and dry grip characteristics relative to standard leather and imitation leather materials used for sports shoes.

Ideally the coefficient of friction, when a modified IUP51 test procedure (see below) designated by the International Union of Leather Technologists and Chemists is used, equals or exceeds a value of 2.0 when dry and 1.5 when wet. In an ideal material, the coefficient of friction when wet is approximately the same as the coefficient of friction when dry. The modified test is based on the standard test using a PTFE reference bed, but where this is modified to be a leather with a polyurethane coating as used in soccer ball production.

The utilisation of gripping areas of such characteristics on the upper of a sports shoe can significantly improve the kicking and ball manipulating characteristics when the shoe is wet or dry, often paralleling or exceeding the subjective performance characteristics of a comparable boot of standard leather construction when wet or dry. This can provide a significant improvement in a player's game, and particularly for amateur or novice players whose skills may be inadequate to compensate for standard wet boots, or to compensate for changes in the characteristics in a standard boot between wet and dry.

A preferred material for construction of the upper of a shoe according to the present invention is a leather, or other material, treated with a suitable coating, or to utilise a microhook or micropile fabric. Such a coating may be a rubberised polymer, or a resinous coating, both of which should be flexible (when the coating has cured or is dry). It should be envisaged that various polymeric and natural materials may be used as a coating, where its main role is to act as a durable flexible coating which adheres to the underlying material (which may be leather) and to also act as a binder for the contained particulate material.

The particulate material may be a mineral material such as silica, carborundum, or other material. Particulate material of various plastics, resins, and glasses, etc. may also be considered.

Various microhook or micropile materials may be used. One such material is Greptile® G200 though other comparable materials may be considered.

For the majority of the preferred coatings and materials the observable coefficient of friction when wet is comparable to the coefficient of friction when dry. This is preferable for performance consistency in changing conditions.

According to the present invention, the entire upper need not comprise the same type of gripping regions, but may do if desired. Accordingly, selective areas may comprise gripping regions of different types, and in some embodiments parts of the upper may comprise materials possessing enhanced dry grip characteristics such as in the inventor's previous application. This comprised a leather or other material coated with a polymer with high plasticiser content, a highly plasticised polyvinylchloride, a soft polyurethane, a silicone rubber, a plasticised PVC/PVA copolymer or composites thereof.

The upper, in such cases, may be manufactured from different sections of materials possessing different characteristics. However, some treatment and coating methods can lend themselves to a number of options. For instance, a sheet of material could be selectively coated with different treatments or coatings so that its surface characteristics (notably coefficient of friction) will vary across the surface. The upper can then be made in part, or full, from such a sheet.

Areas of such a sheet can be coated or treated in different manners. The different regions may comprise visual material such as text, graphics, logos, or other marketing material. Another variation is patterned regions which enhance performance of the shoe, or which enhance certain player characteristics. Such possibilities provide quite significant potentially realisable advantages to both players and shoe manufacturers.

Also within the scope of the invention are patches that may be applied to shoes to provide certain advantages of the present invention such as increased wet grip. Typically these patches will provide a substrate and an outer surface. The outer surface may be a coating applied to a substrate, though may be merely the outer surface of the substrate. Ideally the outer surface will have improved dry grip characteristics according to what has been discussed above. Hence the substrate and outer could comprise a piece of treated leather material, or any of the other previously mentioned material options.

The underside may include an adhesive coating. This may be permanent or non-permanent adhesive, which would allow patches to be used temporarily or readjusted in position. A removable protective cover may be provided over the adhesive back.

The underside may not include adhesive but may be suitable for the application of an adhesive material. This would allow the use of different adhesives to be chosen, and might be used on patches applied during manufacture or by a shoe repairer or other suitably qualified person. The underside may be absorbent, keyed, or otherwise modified to improve adhesion.

Other types of fastening may be provided for attaching the patch. For instance, hook and pile fasteners, such as Velcro®, may be considered.

By way of example, some representative data for different materials tested by the inventor follows. This allows a comparison of the preferred polyisobutylene type materials of the present invention with standard materials, and the dry grip materials developed or utilised by the inventor in relation to his other inventions.

Material	WET coefficient of friction	DRY coefficient of friction
Std athletic leather	0.3	0.8

Textured leather	0.8	1.7
Greptile® G200	3.4	3.5
Rubberised particulate coating	1.5	2.0
Abrasive particulate coating	3.6	3.9
High plasticiser coating of inventor's earlier appln	1.6	11.0
Silicone rubber coating	1.4	9.8

Testing according to IUP51 of Intl Union of Leather Technologists & Chemists

As can be appreciated there are many variations to the present invention, and ways by which it may be implemented. A specific embodiment will be described, by way of example, next.

DESCRIPTION OF DRAWINGS

Figure 1 is a perspective diagrammatic view of one preferred embodiment of a sports shoe according to the present invention, and

Figure 2 is a perspective diagrammatic view of a preferred embodiment of a patch according to the present invention.

DESCRIPTION OF PREFERRED EMBODIMENT

A preferred embodiment of the invention is illustrated in figure 1. This embodiment includes a number of possible features of the invention including grip areas of different types.

Figure 1 illustrates a soccer boot (1). There is generally indicated an upper (1a) and a sole (1b). The sole may be of standard construction for the type of shoe or boot.

The upper comprises sections of different materials stitched together, though other methods of construction can be implemented. For simplicity, we shall refer to common stitched construction in this example.

A lower section (2) near the sole comprises a rubberised/particulate coated leather material. Adjacent section (3) comprises a patch of a resinous particulate coated material, which has been adhesively applied to customise the boot for the player.

Front sections (4) and (5) are a leather material in which a rubberised particulate coating has been selectively applied in a repeating pattern comprising the manufacturers logo. Consequently there are areas of enhanced dry grip distributed over the surfaces of these sections.

Sections (6) and (7) comprise dry grip sections of a material such as Greptile® G200 which has reasonable wet grip characteristics as well as dry grip.

The rear portion (8) may be of various materials according to user choice.

It should be noted that this represents just one possible application of the present invention out of many. Not all sports shoes need be constructed in this way, nor include as many different aspects of the invention.

Figure 2 illustrates a patch (20) according to the present invention shown partly in cross-section though the dimensions have been exaggerated. There is provided a substrate (21) of a thin leather material to which a rubberised particulate coating has been applied to provide an upper surface (22) of enhanced dry grip characteristics.

The underside (23) comprises an adhesive material overlaid with a removable protective backing (24).

In practice the patch can be trimmed to shape, if needed, and adhered to the outer surface of a shoe where required. As variations, adhesives able to adhere to damp or wet surfaces may be employed, allowing application to a damp shoe during a game. Also, pre-contoured patches may be available, which are contoured in 3-dimensions to fit over contoured regions of a shoe such as the tip of the toe portion.

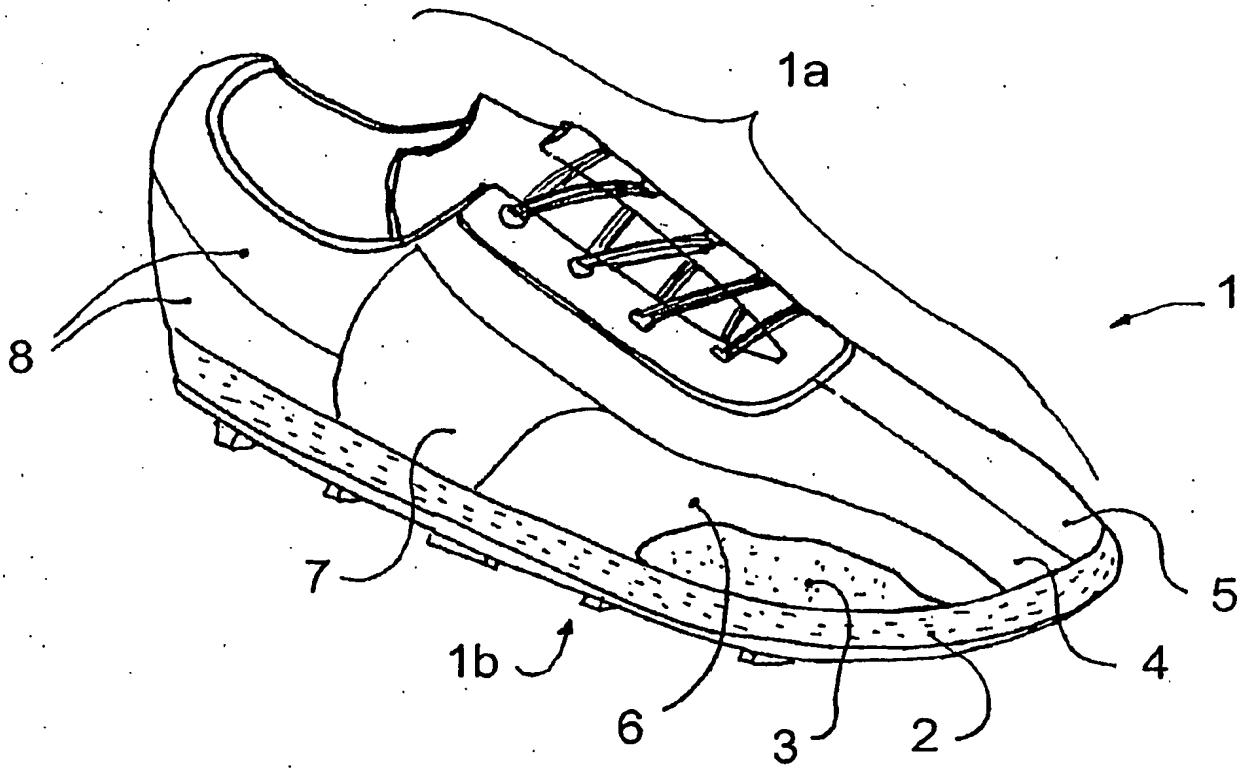
Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the spirit or scope of the present invention as defined in the appended claims.

It should also be understood that the term "comprise" where used herein is not to be considered to be used in a limiting sense. Accordingly, 'comprise' does not represent nor define an exclusive set of items, but includes the possibility of other components and items being added to the list.

This specification is also based on the understanding of the inventor regarding the prior art. The prior art description should not be regarded as being authoritative disclosure on the true state of the prior art but rather as referencing considerations brought to the mind and attention of the inventor when developing this invention.

Simon Jeremy SKIRROW
by his Patent Attorneys

Figure 1



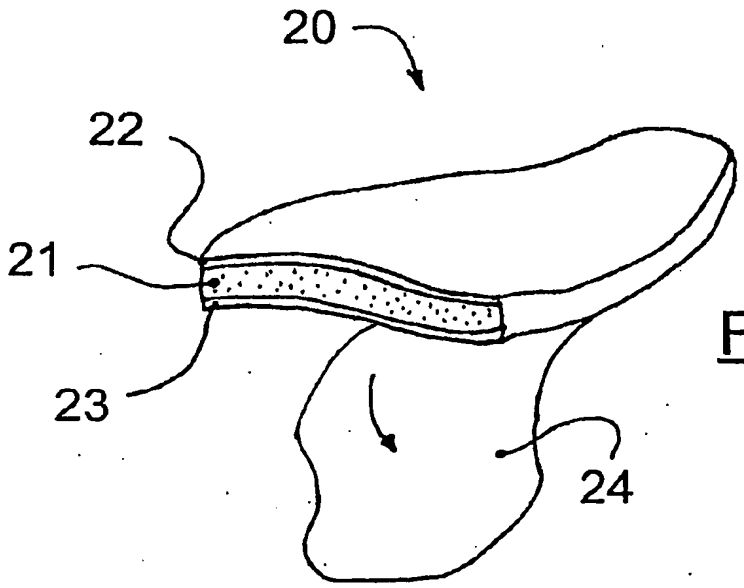


Figure 2

PATENT COOPERATION TREATY

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Date of mailing *(day/month/year)* 21 December 2004 (21.12.2004)	
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Applicant SKIRROW, Simon, Jeremy	

1. By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

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Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
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The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 740 14 35

Authorized officer
Laaroussi Abderrazak

Facsimile No. +41 22 338 87 40
Telephone No. +41 22 338 9772